

## **Wet Detention Basin Best Management Practice - Operation and Maintenance Manual**

\_\_\_\_\_ agrees to keep maintenance records on the wet detention basin best management practice(s) located on the \_\_\_\_\_ site. The maintenance records shall be kept at the site in a set location, and shall be made available to the City of Hickory upon request. Any deficiencies found during inspections of the wet detention basin best management practice(s) shall be corrected, repaired, or replaced immediately.

Important operation and maintenance procedures:

1. Immediately after the wet detention basin is established, the plants on the vegetated shelf and perimeter of the basin should be watered twice weekly if necessary until the plants become established (commonly six weeks).
2. No portion of the wet detention basin should be fertilized after the initial fertilization that is required to establish the plants on the vegetated shelf.
3. Stable groundcover should be maintained in the drainage area to reduce the sediment load to the wet detention basin.
4. If the basin must be drained for an emergency or for routine maintenance, the flushing of sediment through the emergency drain should be minimized.
5. If the embankment meets the criteria, it shall be inspected as required by a dam safety expert.

After the wet detention basin is established, \_\_\_\_\_ shall be responsible to perform the following inspection activities. Any deficiencies found during inspections of the wet detention basin best management practice shall be corrected, repaired, or replaced immediately.

### **I. Monthly or after every 1-inch rainfall, whichever comes first:**

- a. Remove trash and debris from wet detention basin.
- b. Clear trash and debris from catch basin riser grates, bottom of catch basin, and check outlet pipe for obstructions and clogging. Check and clear orifice(s) of any obstructions.
- c. Check pond side slopes and contributing areas and repair eroded areas before next rainfall.
- d. Check pond inlet and outlet pipes, grass swales and inlet/outlet dissipaters.
- e. Replace rip rap that is choked with sediment.
- f. Check forebay for sedimentation. Remove sediment to restore original forebay design depth when 1-foot dedicated sediment storage area has reached its capacity and is full.

### **II. Annually**

- a. Check pond depth at various locations. Remove sediment to restore original pond design depth when 1-foot dedicated sediment storage area has reached its capacity and is full.
- b. Check the condition of the dam for leaks and seepage, transverse or longitudinal cracks, sinkholes, woody vegetation, signs of rodent infestation or other such problems.
- c. Check the operation of all mechanical devices and vales for proper operation.

#### IV. General

- a. A natural buffer is encouraged along the banks of the pond where appropriate. Mowing can be used to maintain a low buffer. Vegetation along the dam should be mowed on a regular basis to discourage root intrusion.
- b. Wetland plants are encouraged along the 10 feet wide littoral shelf, however, invasive species such as cattails shall be removed.
- c. All components of impoundment system are to be kept in good working order.
- d. This property and impoundment is also subject to the Operation and Maintenance Agreement filed for this project.
- e. Table 1 below contains potential problems and remedial actions to be taken.

**Table 1 – Potential Problems and Remedial Actions**

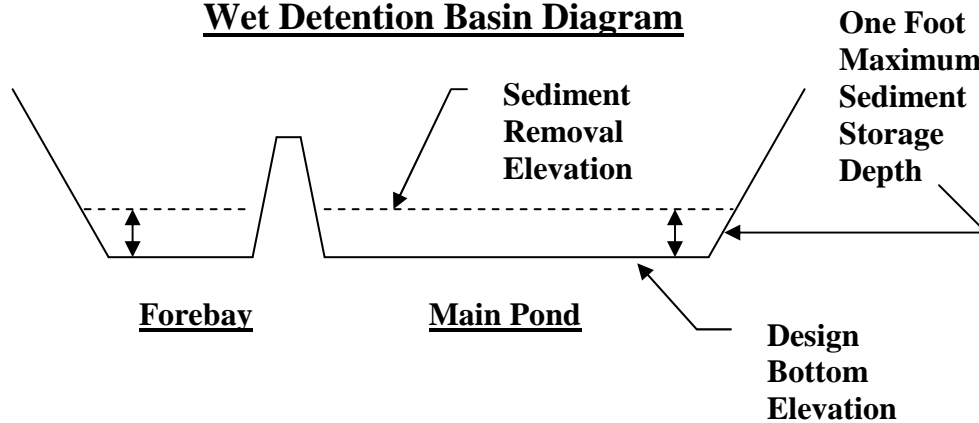
<b>BMP Element</b>	<b>Potential Problems</b>	<b>Remedial Action</b>
Entire BMP	Trash/debris is present	Remove the trash/debris
Perimeter of the wet detention basin	Areas of bare soil and/or erosive gullies are present	Regrade the soil if necessary to remove the gullies and then plant ground cover. Provide lime and fertilizer if necessary. Water if necessary until ground cover is reestablished.
Perimeter of the wet detention basin	Vegetation is too short or too long.	Maintain vegetation at height of approximately six inches.
Pipe Inlet	Pipe is clogged	Unclog the pipe and dispose of the material properly.
Pipe Inlet	Pipe is cracked or damaged	Repair or replace.
Swale Inlet	Erosion is occurring in the swale	Regrade the swale if necessary. Install turf matting if necessary. Reestablish ground cover. Determine if rip rap is needed to avoid future erosion.
Forebay	Sediment has accumulated to a depth of equal to or greater than one foot which is the original design depth for sediment storage	Search for source of the sediment and remedy the problem. Remove the sediment and dispose of it properly at an off-site location.
Forebay	Erosion has occurred.	Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.

<b>BMP Element</b>	<b>Potential Problems</b>	<b>Remedial Action</b>
Forebay	Weeds are present.	Remove the weeds. If a pesticide is used, wipe it on the plants rather than spraying it.
Vegetated Shelf	Pruning is needed to maintain plant health.	Prune according to best professional practices.
Vegetated Shelf	Plants are dead, dying, or diseased.	Determine the source of the problem. Is it soils, disease, etc.? Remedy the problem and replace the plants. If a soil test indicates it is necessary, provide a one-time fertilizer application to establish plants.
Vegetated Shelf	Weeds are present.	Remove the weeds. If a pesticide is used, wipe it on the plants rather than spraying it.
Main Treatment Area (Main Pond)	Sediment has accumulated to a depth equal to or greater than the original design sediment storage depth of one foot.	Search for the source of the sediment and remedy the problem. Remove the sediment to the original design bottom elevation of the pond and dispose of it properly at an off-site location.
Main Treatment Area (Main Pond)	Algal growth covers 50% or more of the water surface area.	Consult a professional to remove and control the algal growth.
Main Treatment Area (Main Pond)	Cattails, phragmites, or other invasive plants cover 50% or more of the basin surface.	Wipe an insecticide on the plants rather than spraying them.
Embankment	Shrubs have started to grow on the embankment.	Remove the shrubs immediately.
Embankment	A tree has started to grow on the embankment	Remove the tree immediately unless removing it adversely affects the integrity of the embankment. If so, contact a qualified professional concerning the tree removal and embankment repair.

<b>BMP Element</b>	<b>Potential Problems</b>	<b>Remedial Action</b>
Embankment	Evidence of muskrat or beaver activity is present	Consult a professional to trap and remove the muskrats and beavers. Make repairs to the embankment if necessary.
Embankment	An annual inspection by a qualified professional shows that the embankment needs repair.	Make all needed repairs immediately.
Outlet Device	The outlet device is clogged.	Clean out the outlet device. Dispose of the sediment off-site.
Outlet Device	The outlet device is damaged.	Repair or replace the outlet device.
Outlet	Erosion at the outlet.	Repair the eroded area as necessary.

**Note: The next page contains a typical section through the wet detention basin. The bottom elevation and the sediment removal elevation of both the forebay and main pond are as noted.**

### Wet Detention Basin Diagram



Sediment shall be removed to the original design bottom elevation in the forebay when the 1-foot (depth) dedicated sediment storage area reaches its capacity and is full.

#### Main Pond

Bottom Elevation \_\_\_\_\_

Sediment Removal Elevation \_\_\_\_\_

Sediment shall be removed to the original design bottom elevation in the main pond when the 1-foot (depth) dedicated sediment storage area reaches its capacity and is full.

#### Main Pond

Bottom Elevation \_\_\_\_\_

Sediment Removal Elevation \_\_\_\_\_